

REMARKS

This responds to the Final Office Action dated September 2, 2008.

Claims 1-3, 6, 8, 10, 13, 16-17, 25-26, and 58-59 are amended. Claims 1-18, 25-27, and 58-61 remain pending in this application.

§102/§103 Rejections of the Claims

Claims 1-3, 6, 9, 13-14, 17-18, 25, 58, 59, and 60 were rejected under 35 U.S.C. §102(b) for anticipation by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Sweeney (U.S. Patent No. 4,996,984, herein "Sweeney").

Claim 1

Claim 1 has been amended to better describe the recited subject matter. Support for the amendment is found, for example, on page 7, lines 1-13 and page 32, lines 11-12.

Applicant respectfully traverses the rejection and submits that the cited portions of Sweeney, alone or in combination with reasoning given in the Office Action, do not provide the claimed subject matter. For example, Applicant is unable to find in the cited portions of Sweeney, among other things, a controller adapted to determine a curvature series including curvatures each being a non-linear function of first and second derivatives of a sampled signal and generate a series of characteristic points each associated with a time of a lobe in the curvature series, as recited in claim 1. Applicant is also unable to find a reason in the Office Action that remedies this deficiency.

The Office Action states, in paragraph 4, that "Sweeney discloses a defibrillation method involving determining a fibrillation cycle through the use of autocorrelation techniques (Col. 4, line 36-59)". However, Applicant is unable to find in the Office Action how Sweeney provides a controller adapted to determine the curvature series and generate the series of characteristic points as recited in claim 1. Additionally, regarding the obviousness rejection, Applicant respectfully submits that the Office Action has not articulated a reason why one of ordinary skill in the art would determine the curvature series and generate the series of characteristic points as

recited in claim 1 in order to determine a fundamental frequency of a sample signal corresponding to cardiac electrical activity.

Applicant respectfully requests reconsideration and allowance of claim 1.

Claims 2-3

Claims 2-3 are dependent on claim 1, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 1 is incorporated herein to support the patentability of claims 2-3.

Applicant respectfully requests reconsideration and allowance of claims 2-3.

Claim 6

Claim 6 has been amended to better describe the recited subject matter. Support for the amendment is found, for example, on page 7, lines 1-13, page 31, lines 26-27, and page 32, lines 11-12.

Applicant respectfully traverses the rejection and submits that the cited portions of Sweeney, alone or in combination with reasoning given in the Office Action, do not provide the claimed subject matter. For example, Applicant is unable to find in the cited portions of Sweeney, among other things, calculating a series of curvatures each being a non-linear function of first and second derivatives of a cardiac signal, and establishing a series of characteristic points each corresponding to a time of occurrence of a lobe in the series of curvatures, as recited in claim 6. Applicant is also unable to find a reason in the Office Action that remedies this deficiency.

The Office Action states, in paragraph 4, that “Sweeney discloses a defibrillation method involving determining a fibrillation cycle through the use of autocorrelation techniques (Col. 4, line 36-59)”. However, Applicant is unable to find in the Office Action how Sweeney provides calculating the series of curvatures and establishing the series of characteristic points as recited in claim 6. Additionally, regarding the obviousness rejection, Applicant respectfully submits that the Office Action has not articulated a reason why one of ordinary skill in the art would calculate the series of curvatures and establish the series of characteristic points as recited in claim 6 in order to determine a frequency for a cardiac signal.

Applicant respectfully requests reconsideration and allowance of claim 6.

Claim 9

Claim 9 is dependent on claim 6, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 6 is incorporated herein to support the patentability of claim 9.

Applicant respectfully requests reconsideration and allowance of claim 9.

Claim 13

Claim 13 has been amended to better describe the recited subject matter. Support for the amendment is found, for example, on page 7, lines 1-13 and page 32, lines 11-12.

Applicant respectfully traverses the rejection and submits that the cited portions of Sweeney, alone or in combination with reasoning given in the Office Action, do not provide the claimed subject matter. For example, Applicant is unable to find in the cited portions of Sweeney, among other things, using a processor to generate a curvature series including curvatures each being a non-linear function of first and second derivatives of a sampled input signal, and generating a series of characteristic points as a function of the curvature series, the characteristic points each associated with a lobe in the curvature series and having a time as a function of a time of occurrence of the lobe and a size as a function of an area of the lobe, as recited in claim 13. Applicant is also unable to find a reason in the Office Action that remedies this deficiency.

The Office Action states, in paragraph 4, that “Sweeney discloses a defibrillation method involving determining a fibrillation cycle through the use of autocorrelation techniques (Col. 4, line 36-59)”. However, Applicant is unable to find in the Office Action how Sweeney provides using a processor to generate the curvature series and generating the series of characteristic points as the function of the curvature series as recited in claim 13. Additionally, regarding the obviousness rejection, Applicant respectfully submits that the Office Action has not articulated a reason why one of ordinary skill in the art would generate the curvature series and the series of characteristic points as recited in claim 13 in order to determine a fundamental frequency of a sampled input signal being a function of sensed cardiac electrical activity.

Applicant respectfully requests reconsideration and allowance of claim 13.

Claims 14 and 17-18

Claims 14 and 17-18 are dependent on claim 13, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 13 is incorporated herein to support the patentability of claims 14 and 17-18.

Applicant respectfully requests reconsideration and allowance of claims 14 and 17-18.

Claim 25

Claim 25 has been amended to better describe the recited subject matter. Support for the amendment is found, for example, on page 7, lines 1-13, page 31, lines 26-27, and page 32, lines 11-12.

Applicant respectfully traverses the rejection and submits that the cited portions of Sweeney, alone or in combination with reasoning given in the Office Action, do not provide the claimed subject matter. For example, Applicant is unable to find in the cited portions of Sweeney, among other things, generating a curvature series including curvatures each being a non-linear function of first and second derivatives of the sampled signal, and generating a series of characteristic points in the sampled signal, each characteristic point corresponding to a lobe in the curvature series and having a time corresponding to a time of occurrence of the lobe, as recited in claim 25. Applicant is also unable to find a reason in the Office Action that remedies this deficiency.

The Office Action states, in paragraph 4, that “Sweeney discloses a defibrillation method involving determining a fibrillation cycle through the use of autocorrelation techniques (Col. 4, line 36-59)”. However, Applicant is unable to find in the Office Action how Sweeney provides generating the curvature series and generating the series of characteristic points as recited in claim 25. Additionally, regarding the obviousness rejection, Applicant respectfully submits that the Office Action has not articulated a reason why one of ordinary skill in the art would generate the curvature series and the series of characteristic points as recited in claim 25 in order to determine a fundamental frequency of a sampled cardiac signal.

Applicant respectfully requests reconsideration and allowance of claim 25.

Claim 58

Claim 58 has been amended to better describe the recited subject matter. Support for the amendment is found, for example, on page 7, lines 1-13 and page 32, lines 11-12.

Applicant respectfully traverses the rejection and submits that the cited portions of Sweeney, alone or in combination with reasoning given in the Office Action, do not provide the claimed subject matter. For example, Applicant is unable to find in the cited portions of Sweeney, among other things, generating a first curvature series including curvatures each being a non-linear function of first and second derivatives of a first sampled signal, generating a second curvature series including curvatures each being a non-linear function of first and second derivatives of a second sampled signal, and generating a first series of characteristic points in the first sampled signal and a second series of characteristic points in the second sampled signal, each characteristic point corresponding to a lobe in a curvature series and having a time corresponding to a time of occurrence of the lobe, as recited in claim 58. Applicant is also unable to find a reason in the Office Action that remedies this deficiency.

The Office Action states, in paragraph 4, that “Sweeney discloses a defibrillation method involving determining a fibrillation cycle through the use of autocorrelation techniques (Col. 4, line 36-59)”. However, Applicant is unable to find in the Office Action how Sweeney provides generating a first curvature series, generating the second curvature series, generating the first series of characteristic points, and generating the second series of characteristic points as recited in claim 58. Additionally, regarding the obviousness rejection, Applicant respectfully submits that the Office Action has not articulated a reason why one of ordinary skill in the art would generate the first curvature series, the second curvature series, the first series of characteristic points, and the second series of characteristics as recited in claim 58 in order to classify an epoch (of cardiac activity).

Applicant respectfully requests reconsideration and allowance of claim 58.

Claims 59-60

Claims 59-60 are dependent on claim 58, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 58 is incorporated herein to support the patentability of claims 59-60.

Applicant respectfully requests reconsideration and allowance of claims 59-60.

§103 Rejection of the Claims Using Sweeney

Claims 4-5, 11-12, 15-16, and 61 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweeney as applied above.

Applicant respectfully traverses the rejection.

Claims 4-5 are dependent on claim 1, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 1 is incorporated herein to support the patentability of claims 4-5.

Claims 11-12 are dependent on claim 6, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 6 is incorporated herein to support the patentability of claims 11-12.

Claims 15-16 are dependent on claim 13, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 13 is incorporated herein to support the patentability of claims 15-16.

Claim 61 is dependent on claim 58, which is believed to be allowable for at least the reasons set forth above. Therefore, the discussion above for claim 58 is incorporated herein to support the patentability of claim 61.

Applicant respectfully requests reconsideration and allowance of claims 4-5, 11-12, 15-16, and 61

§103 Rejection of the Claims Using Sweeney and Marcus

Claims 7-8, 10, and 26-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweeney as applied above in view of Marcus (U.S. Patent No. 4,637,400, herein "Marcus").

Claims 7-8 and 10 are dependent on claim 6, which is believed to be allowable for at least the reasons set forth above. It is believed that the addition of Marcus does not remedy the deficiency of the rejection using Sweeney as discussed above for claim 6. Therefore, the discussion above for claim 6 is incorporated herein to support the patentability of claims 7-8 and 10.

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Title: TACHYARRHYTHMIA DETECTION AND DISCRIMINATION BASED ON CURVATURE PARAMETERS

Claims 26-27 are dependent on claim 25, which is believed to be allowable for at least the reasons set forth above. It is believed that the addition of Marcus does not remedy the deficiency of the rejection using Sweeney as discussed above for claim 25. Therefore, the discussion above for claim 25 is incorporated herein to support the patentability of claims 26-27.

Applicant respectfully requests reconsideration and allowance of claims 7-8, 10, and 26-27.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 373-6965 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

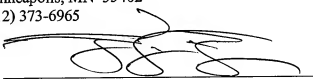
Respectfully submitted,

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Date

October 27, 2008

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 27 day of October, 2008.

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